

Appln No. 10/079,293

Amdt date August 18, 2004

Reply to Office action of May 18, 2004

**Amendments to the Specification:**

On page 2, please delete the paragraph beginning on line 10 through line 15 and replace it with the following:

Other efforts currently being made to improve the fatigue[[,]] and wear lives as well as the delamination resistance of the cutting layer, include the optimization of the interface geometry between the cutting layer and the cutter body. By varying the geometry of this interface, as for example by making the interface non-uniform, the magnitude of the residual stresses formed on the interface due to the coefficient of thermal expansion mismatch between the ultra hard material layer and the cutter body is reduced.

On page 6, please delete the paragraph beginning on line 14 through line 24 and replace it with the following paragraph:

In a first embodiment, the canted interface is planar as shown (FIG. 5A). In another embodiment the canted [[face]] interface is formed by a series of steps 140 along the interface (FIG. 7A). These steps ascend from a first point 126 to a second point 128 on the interface. The upper surface of these steps may be flat (FIG. 7A) or canted (i.e., sloped) themselves (FIG. 7B). The upper surface of the steps may also be curved (FIG. 7C). In further embodiments, the steps 140 may have upper surfaces 142 which are non-uniform (FIG. 7D). Of course, as is apparent to one skilled in the art, the steps themselves form a non-uniform face for interfacing with the cutting layer or with a transition layer. The steps may zig zag across the interface

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(FIG. 8A), or they may curve towards the lower edge 126 of the canted interface (FIG. 8B) or toward the higher edge 128 of the canted interface (FIG. 8C) forming horseshoe shapes or may be linear (FIG. 8D) across the canted interface.

On pages 7 and 8, please delete the paragraph beginning on page 7, line 28 through page 8, line 2 and replace it with the following:

To overcome this problem, in [[a]] further embodiments, the ultra hard material layer is placed only over a portion 171 of the canted interface so as not to [[not]] extend to the support wall of the opening when mounted on a bit body (FIG. 10A). In some embodiments (FIGS. 10B, 10C and 10D) only a portion 170 of the interface is canted and the ultra hard material is placed only over the canted portion. The portion of the interface 172 that will be positioned adjacent to the rear support wall remains uncanted. Preferably, when viewed in cross-section, about 1/3 of the diameter of cutter interface is uncanted (i.e., only about 2/3 of the diameter is canted) as for example shown in FIGS. 10A, 10B and 10C. When only a portion of the interface is canted, the boundary between the canted and uncanted portions of the interface may be linear as shown in FIG. 11A or curved as shown, for example, in FIGS. 11B and 11C.

On page 8, please delete the paragraph beginning on line 14 through line 22, and replace it with the following:

While there are many ways to form the body of a cutter having a canted surface, one method calls for the formation of a

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cylindrical work piece 150 having a dome shaped (or convex) upper protrusion 152 (FIG. 13A). The work piece should have a diameter 154 twice the diameter of the desired cutter body. To form the cylindrical cutter body having the canted interface, preferably EDM is used to cut the cutter body tangential to the central axis 156 of the cylindrical work piece and tangential to the outer surface 158 of the cylindrical work piece[[.]] (FIG. 13B). In a preferred embodiment, two cutter bodies may be cut simultaneously which are tangential along the work piece central axis 156 and which have their central axes 162 along a diameter 160 of the work piece as shown in FIG. 13B.

On page 11, delete the paragraph under the heading "Abstract of the Disclosure" and replace it with the following:

The present invention provides a cutting element having a cylindrical body having a canted end face on which is formed [[a]] an ultra hard material layer and a method of forming the same. One or a plurality of transition layers may be provided between the ultra hard material layer and the cutting element body.